

GenCore version 4.5  
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OM protein - protein search, using sw model

Run on: June 24, 2002, 20:48:36 ; Search time 16.32 Seconds  
(without alignments)  
382.709 Million cell updates/sec

Title: US-09-664-326-23

Perfect score: 368  
Sequence: 1 LVTPTCTESGQNLCLCEGSNN.....PKQSHNDGDFEPEIPEYIQ 65

Scoring table: BLOSUM62  
Gapop 10.0 , Gapext 0.5

Searched: 283138 seqs, 96089334 residues

Total number of hits satisfying chosen parameters: 283138

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%  
Maximum Match 100%

Listing first 45 summaries

Database :

1: PIR\_71:\*  
2: PIR1:\*  
3: PIR3:\*  
4: PIR4:\*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

#### SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	360	97.8	65	1 HULXH	thrombin inhibitor
2	353	95.9	65	2 S05674	hirudin IIB - medi
3	352	95.7	65	2 S78521	hirudin IIB - me
4	350	95.1	65	2 S05673	hirudin IIA - medi
5	348	94.6	65	2 S05676	hirudin IIR - medi
6	348	94.6	65	2 S05678	hirudin II - medic
7	346	94.0	65	2 S78520	hirudin IIA' - me
8	345	93.8	65	2 S05677	hirudin IIB - med
9	345	93.8	65	2 S05675	hirudin IIA - med
10	343	93.2	65	2 S05679	hirudin IIR - medi
11	333	90.5	72	2 A37417	thrombin inhibitor
12	315	85.6	66	2 A24350	thrombin inhibitor
13	288	78.3	55	2 S05672	hirudin I - medic
14	249	67.7	63	2 A53883	hirudin HVI homolo
15	247	67.1	84	2 S33329	hirudin HM2 - leec
16	230	62.5	84	2 S33328	hirudin HM1 - leec
17	215	58.4	63	1 A42207	hirudin P6 - leech
18	173	47.0	62	1 HULXLM	hirudin P18 - lee
19	173	47.0	17	2 S05671	hirudin Ia - medic
20	74	20.1	2352	2 T30201	Notch homolog prot
21	69	18.8	1076	2 A42125	trophozoite cystei
22	68.5	18.6	1761	1 PXYBYA	H+-transporting AT
23	68.5	18.6	2233	2 T28659	surface protein 51
24	66	17.9	761	2 T09052	hypothetical prote
25	66	17.9	2150	2 T32497	hypothetical prote
26	66	17.9	5376	2 T42215	zonadhesin - mouse
27	65	17.7	558	2 T15448	hypothetical prote
28	65	17.7	1043	2 T19734	hypothetical prote
29	65	17.7	1661	2 T31330	head-activator bin

30	64	17.4	317	2 I46916	insulin-like growt
31	64	17.4	1743	2 T26859	hypothetical prote
32	63.5	17.3	318	2 A82319	glutathione synthe
33	63.5	17.3	474	2 S18452	variant surface gl
34	63.5	17.3	755	2 A44315	collagen oligomer
35	63.5	17.3	1722	2 E89753	protein F11C7.4 [i
36	63.5	17.3	2321	2 S78549	notch3 protein - h
37	63.5	17.3	2703	1 A24420	notch protein - fr
38	63	17.1	80	2 T10183	antifungal protein
39	63	17.1	778	2 T05341	S-receptor kinase
40	62.5	17.0	513	1 JQ1486	activin receptor I
41	62.5	17.0	1820	2 A55494	latent transformin
42	62	16.8	79	2 T10243	antifungal protein
43	62	16.8	79	2 T07917	antifungal protein
44	62	16.8	80	2 T02621	probable antifunga
45	62	16.8	80	2 T02622	probable antifunga

#### ALIGNMENTS

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RESULT 1
HULXH
thrombin inhibitor (hirudin) - medicinal leech
C:Species: Hirudo medicinalis (medicinal leech)
C:Date: 30-Nov-1980 #sequence revision 03-Aug-1984 #text_change 07-May-1999
C:Accession: A91318; A94429; A60811; A01289
R:Dot, J.; Muller, H.P.; Seemuller, U.; Chang, J.Y.
FEBS Lett. 165, 180-183, 1984
A:Title: The complete amino acid sequence of hirudin, a thrombin specific inhibitor.
A:Accession: A91318
A:Reference number: A91318
A:Molecule type: protein
A:Residues: 1-65 <DOD>
R:Peterson, T.E.; Roberts, H.R.; Sottrup-Jensen, L.; Magnusson, S.; Bagdy, D.
in Protides of the Biological Fluids, Proc. 23rd Collq., Peeters, H., ed., pp.145-14
A:Title: Rapid purification and revised amino-terminal sequence of hirudin: a specif
A:Reference number: A60811; MUID:87211066
A:Accession: A94429
A:Molecule type: Protein
A:Residues: 1-65 <PET>
R:Maio, S.J.T.; Yates, M.T.; Blankenship, D.T.; Cardin, A.D.; Krstenansky, J.L.; Loven
Anal. Biochem. 161, 514-518, 1987
A:Title: Rapid purification and revised amino-terminal sequence of hirudin: a specif
A:Reference number: A60811; MUID:87211066
A:Accession: A60811
A:Molecule type: Protein
A:Residues: 1-32, N', 34-43 <MAO>
A:Note: the authors suggest that their identification of 33-Asn is correct and that 3
present a natural variant of hirudin
C:Comment: Hirudin is a potent thrombin-specific protease inhibitor.
C:Superfamily: thrombin inhibitor
C:Keywords: anticoagulant; sulfitoprotein
F:6-14,16-28,22-39/Disulfide bonds: #status experimental
F:63/Binding site: sulfate (Tyr) (covalent) #status experimental

Query Match 97.8% Score 360; DB 1; Length 65;
Best Local Similarity 96.9% Pred. No. 7.8e-30;
Matches 63; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

OY 1 LVTPTCTESGQNLCLCEGSNNCGGNKCTIGSGDKRNCVYGEYTPKQSHNDGDFEIP 60
DB 1 VYPTCTESGQNLCLCEGSNNCGGNKCTIGSGDKRNCVYGEYTPKQSHNDGDFEIP 60
OY 61 EYLIQ 65
DB 61 EYLIQ 65

RESULT 2
S05674
hirudin IIB - medicinal leech
N:Alternate names: thrombin inhibitor

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C:Species: Hirudo medicinalis (medicinal leech)  
C:Date: 30-Sep-1991 #sequence\_revision 30-Sep-1991 #text\_change 17-Jul-1998  
C:Accession: S05674  
R:Scharf, M.; Engels, J.; Triplier, D.  
FEBS Lett. 255, 105-110, 1989  
A:Title: Primary structures of new 'iso-hirudins'.  
A:Reference number: S05671; MUID:90005945  
A:Accession: S05674  
A:Molecule type: protein  
A:Residues: 1-65 <SCH>  
C:Superfamily: thrombin inhibitor  
C:Keywords: anticoagulant; serine proteinase inhibitor; sulfoprotein  
F:6-14,16-28,22-39/Disulfide bonds: #status predicted  
F:63/Binding site: sulfate (Tyr) (covalent) #status predicted

Query Match 95.9%; Score 353; DB 2; Length 65;  
Best Local Similarity 93.8%; Pred. No. 4e-29;  
Matches 61; Conservative 4; Mismatches 0; Indels 0; Gaps 0;

QY 1 LVTDTESGONCLCEGSNVCQGKNCILGSDGKNCVGTGCTPKPQSHNDGDFEETP 60  
:|||||  
Db 1 IYTDCTESGONCLCEGSNVCQGNKNCILGSNGEENOCVTGCTPKPQSHNDGDFEETP 60

QY 61 EEYLIQ 65  
|||||  
Db 61 EEYLIQ 65

RESULT 3  
S78521  
hirudin IIIB' - medicinal leech  
N:Alternate names: thrombin inhibitor  
C:Species: Hirudo medicinalis (medicinal leech)  
C:Date: 17-Jul-1998 #sequence\_revision 17-Jul-1998 #text\_change 17-Jul-1998  
C:Accession: S78521  
R:Scharf, M.; Engels, J.; Triplier, D.  
FEBS Lett. 255, 105-110, 1989  
A:Title: Primary structures of new 'iso-hirudins'.  
A:Reference number: S05671; MUID:90005945  
A:Accession: S78521  
A:Molecule type: protein  
A:Residues: 1-65 <SCH>  
C:Superfamily: thrombin inhibitor  
C:Keywords: anticoagulant; serine proteinase inhibitor; sulfoprotein  
F:6-14,16-28,22-39/Disulfide bonds: #status predicted  
F:63/Binding site: sulfate (Tyr) (covalent) #status predicted

Query Match 95.7%; Score 352; DB 2; Length 65;  
Best Local Similarity 93.8%; Pred. No. 5.1e-29;  
Matches 61; Conservative 3; Mismatches 1; Indels 0; Gaps 0;

QY 1 LVTDTESGONCLCEGSNVCQGKNCILGSDGKNCVGTGCTPKPQSHNDGDFEETP 60  
:|||||  
Db 1 VYTDCTESGONCLCEGSNVCQGNKNCILGSNGEENOCVTGCTPKPQSHNDGDFEETP 60

QY 61 EEYLIQ 65  
|||||  
Db 61 EEYLIQ 65

RESULT 4  
S05673  
hirudin IIA - medicinal leech  
N:Alternate names: thrombin inhibitor  
C:Species: Hirudo medicinalis (medicinal leech)  
C:Date: 21-Nov-1993 #sequence\_revision 10-Nov-1995 #text\_change 17-Jul-1998  
C:Accession: S05673  
R:Scharf, M.; Engels, J.; Triplier, D.  
FEBS Lett. 255, 105-110, 1989  
A:Title: Primary structures of new 'iso-hirudins'.  
A:Reference number: S05671; MUID:90005945

A:Accession: S05673  
A:Molecule type: protein  
A:Residues: 1-65 <SCH>  
C:Superfamily: thrombin inhibitor  
C:Keywords: anticoagulant; serine proteinase inhibitor; sulfoprotein  
F:6-14,16-28,22-39/Disulfide bonds: #status predicted  
F:47/Inhibitory site: Lys (thrombin) #status predicted  
F:63/Binding site: sulfate (Tyr) (covalent) #status predicted

Query Match 95.1%; Score 350; DB 2; Length 65;  
Best Local Similarity 93.8%; Pred. No. 8.1e-29;  
Matches 61; Conservative 2; Mismatches 2; Indels 0; Gaps 0;

QY 1 LVTDTESGONCLCEGSNVCQGKNCILGSDGKNCVGTGCTPKPQSHNDGDFEETP 60  
:|||||  
Db 1 IYTDCTESGONCLCEGSNVCQGNKNCILGSNGEENOCVTGCTPKPQSHNDGDFEETP 60

QY 61 EEYLIQ 65  
|||||  
Db 61 EEYLIQ 65

RESULT 5  
S05676  
hirudin III - medicinal leech  
N:Alternate names: thrombin inhibitor  
C:Species: Hirudo medicinalis (medicinal leech)  
C:Date: 21-Nov-1993 #sequence\_revision 10-Nov-1995 #text\_change 17-Jul-1998  
C:Accession: S05676  
R:Scharf, M.; Engels, J.; Triplier, D.  
FEBS Lett. 255, 105-110, 1989  
A:Title: Primary structures of new 'iso-hirudins'.  
A:Reference number: S05671; MUID:90005945  
A:Accession: S05676  
A:Molecule type: protein  
A:Residues: 1-65 <SCH>  
C:Superfamily: thrombin inhibitor  
C:Keywords: anticoagulant; serine proteinase inhibitor; sulfoprotein  
F:6-14,16-28,22-39/Disulfide bonds: #status predicted  
F:63/Binding site: sulfate (Tyr) (covalent) #status predicted

Query Match 94.6%; Score 348; DB 2; Length 65;  
Best Local Similarity 93.8%; Pred. No. 1.3e-28;  
Matches 61; Conservative 2; Mismatches 2; Indels 0; Gaps 0;

QY 1 LVTDTESGONCLCEGSNVCQGKNCILGSDGKNCVGTGCTPKPQSHNDGDFEETP 60  
:|||||  
Db 1 VYTDCTESGONCLCEGSNVCQGNKNCILGSNGEENOCVTGCTPKPQSHNDGDFEETP 60

QY 61 EEYLIQ 65  
|||||  
Db 61 EEYLIQ 65

RESULT 6  
S05678  
hirudin II - medicinal leech  
N:Alternate names: thrombin inhibitor  
C:Species: Hirudo medicinalis (medicinal leech)  
C:Date: 17-Jul-1998 #sequence\_revision 17-Jul-1998 #text\_change 17-Jul-1998  
C:Accession: S05678  
R:Scharf, M.; Engels, J.; Triplier, D.  
FEBS Lett. 255, 105-110, 1989  
A:Title: Primary structures of new 'iso-hirudins'.  
A:Reference number: S05671; MUID:90005945  
A:Accession: S05678  
A:Molecule type: protein  
A:Residues: 1-65 <SCH>  
C:Superfamily: thrombin inhibitor  
C:Keywords: anticoagulant; serine proteinase inhibitor; sulfoprotein  
F:6-14,16-28,22-39/Disulfide bonds: #status predicted



RESULT 11  
A37417  
thrombin inhibitor (hirudin) type II precursor - medicinal leech (fragment)  
C:Species: Hirudo medicinalis (medicinal leech)  
C:Date: 28-Apr-1993 #sequence\_revision 28-Apr-1993 #text\_change 16-Jul-1999  
C:Accession: A37417  
R:Harvey, R.P.; Degryse, E.; Stefani, L.; Schamber, F.; Cazenave, J.P.; Courtney, M.; To  
Proc. Natl. Acad. Sci. U.S.A. 83, 1084-1088, 1986  
A:Title: Cloning and expression of a cDNA coding for the anticoagulant hirudin from the  
A:Reference number: A37417; MUID:86149219  
A:Accession: A37417  
A:Status: preliminary; not compared with conceptual translation  
A:Molecule type: mRNA  
A:Residues: 1-72 <HAR>  
A:Cross-references: GB:M12693; NID:g159224; PIDN:AAA29195.1; PID:g159225  
C:Superfamily: thrombin inhibitor

Query Match 90.5%; Score 333; DB 2; Length 72;  
Best Local Similarity 87.7%; Pred. No. 4.7e-27;  
Matches 57; Conservative 6; Mismatches 2; Indels 0; Gaps 0;

OY 1 LVTDTESGQNLCLCEGSNVCQGKNCILGSDGKNCVTEGTPKPSHNDGFEETP 60  
:|||||  
Db 8 LVTDTESGQNLCLCEGSNVCQGKNCILGSDGKNCVTEGTPKPSHNDGFEETP 67  
OY 61 EETLQ 65  
:|||||  
Db 68 EETLQ 72

RESULT 12  
A24350  
thrombin inhibitor (hirudin PA) - medicinal leech  
N:Alternate names: hirudin (plasminogen activator-type)  
C:Species: Hirudo medicinalis (medicinal leech)  
C:Date: 31-Mar-1988 #sequence\_revision 31-Mar-1988 #text\_change 18-Jun-1993  
C:Accession: A24350  
R:Dodt, J.; Machleidt, W.; Seemüller, U.; Maschler, R.; Fritzt, H.  
Biol. Chem. Hoppe-Seyler 367, 803-811, 1986  
A:Title: Isolation and characterization of hirudin isoinhibitors and sequence analysis  
A:Reference number: A24350; MUID:87026247  
A:Accession: A24350  
A:Molecule type: protein  
A:Residues: 1-66 <DOD>  
C:Superfamily: thrombin inhibitor

Query Match 85.6%; Score 315; DB 2; Length 66;  
Best Local Similarity 87.1%; Pred. No. 2.9e-25;  
Matches 54; Conservative 4; Mismatches 4; Indels 0; Gaps 0;

OY 1 LVTDTESGQNLCLCEGSNVCQGKNCILGSDGKNCVTEGTPKPSHNDGFEETP 60  
:|||||  
Db 1 LVTDTESGQNLCLCEGSNVCQGKNCILGSDGKNCVTEGTPKPSHNDGFEETP 60  
OY 61 EE 62  
:|:  
Db 61 ED 62

RESULT 13  
S05672  
hirudin I - medicinal leech (fragments)  
N:Alternate names: thrombin inhibitor  
C:Species: Hirudo medicinalis (medicinal leech)  
C:Date: 21-Nov-1993 #sequence\_revision 10-Nov-1995 #text\_change 17-Jul-1998  
C:Accession: S05672  
R:Scharf, M.; Engels, J.; Tripier, D.  
FEBS Lett. 255, 105-110, 1989  
A:Title: Primary structures of new 'iso-hirudins'.

A:Reference number: S05671; MUID:90005945  
A:Accession: S05672  
A:Molecule type: protein  
A:Residues: 1-55 <SCH>  
C:Superfamily: thrombin inhibitor  
C:Keywords: anticoagulant; serine proteinase inhibitor; sulfoprotein  
F:6-14/Disulfide bonds: #status predicted  
F:53/Binding site: sulfate (Tyr) (covalent) #status predicted

Query Match 78.3%; Score 288; DB 2; Length 55;  
Best Local Similarity 81.5%; Pred. No. 1.3e-22;  
Matches 53; Conservative 1; Mismatches 1; Indels 10; Gaps 1;

OY 1 LVTDTESGQNLCLCEGSNVCQGKNCILGSDGKNCVTEGTPKPSHNDGFEETP 60  
:|||||  
Db 1 LVTDTESGQNLCLCEGSNVCQGKNCILGSDGKNCVTEGTPKPSHNDGFEETP 50  
OY 61 EETLQ 65  
:|||||  
Db 51 EETLQ 55

RESULT 14  
A53883  
hirudin HV1 homolog bufrudin - leech (Hirudinaria manillensis)  
C:Species: Hirudinaria manillensis  
C:Date: 27-Sep-1994 #sequence\_revision 18-Nov-1994 #text\_change 09-Mar-1996  
C:Accession: A53883  
R:Electricwala, A.; Hartwell, R.; Scawen, M.D.; Atkinson, T.  
J. Protein Chem. 12, 365-370, 1993  
A:Title: The complete amino acid sequence of a hirudin variant from the leech Hirudin  
A:Reference number: A53883; MUID:94000343  
A:Accession: A53883  
A:Status: preliminary  
A:Molecule type: protein  
A:Residues: 1-63 <ELE>  
A:Experimental source: head portions  
A:Note: sequence extracted from NCBI backbone (NCBIP:139162)  
C:Superfamily: thrombin inhibitor

Query Match 67.7%; Score 249; DB 2; Length 63;  
Best Local Similarity 67.7%; Pred. No. 1.3e-18;  
Matches 44; Conservative 8; Mismatches 11; Indels 2; Gaps 1;

OY 1 LVTDTESGQNLCLCEGSNVCQGKNCILGSDGKNCVTEGTPKPSHNDGFEETP 60  
:|||||  
Db 1 VSTDTESGQNLCLCEGSNVCQGKNCQLSSSG--NOCVHGEGTPKPSHNDGFEETP 58  
OY 61 EETLQ 65  
:|:  
Db 59 DEXIK 63

RESULT 15  
S33329  
hirudin HM2 - leech (Hirudinaria manillensis)  
C:Species: Hirudinaria manillensis  
C:Date: 06-Jan-1995 #sequence\_revision 06-Jan-1995 #text\_change 16-Jul-1999  
C:Accession: S33329  
R:Schachter, E.; Nilti, G.; Valasina, B.; Orsini, G.; Visco, C.; Ferreira, M.; Sawyer,  
Eur. J. Biochem. 214, 295-304, 1993  
A:Title: Novel hirudin variants from the leech Hirudinaria manillensis. Amino acid se  
A:Reference number: S33328; MUID:93285156  
A:Accession: S33329  
A:Status: preliminary  
A:Molecule type: DNA  
A:Residues: 1-84 <SCA>  
A:Cross-references: EMBL:X72786; NID:g312674; PIDN:CAA51293.1; PID:g312675  
C:Genetics:  
A:Introns: 21/1; 37/3; 61/1  
C:Superfamily: thrombin inhibitor



